REMARKS

Applicant has studied the Office Action dated June 15, 2005 and has made amendments to the claims. It is submitted that the application, as amended, is in condition for allowance. By virtue of this amendment, claims 1-20 are pending. Claims 1-16 have been amended, and new claims 17-20 have been added. Reconsideration and allowance of the pending claims in view of the above amendments and the following remarks are respectfully requested.

Claims 1-16 were objected to because of "informalities". Claims 1-16 have been amended as requested by the Examiner. It is submitted that all of the claims now fulfill the requirements of 35 U.S.C. § 112. Therefore, it is respectfully submitted that the objection to claims 1-16 should be withdrawn.

Claims 1, 7, 8, 10, and 16 were rejected under 35 U.S.C. § 102(b) as being anticipated by Allie et al. (U.S. Patent No. 5,715,320). This rejection is respectfully traversed.[1]

The present invention is directed to control procedures for a dynamic system that use a fuzzy logic model of at least one inverse transfer function of the system. One preferred embodiment provides a control method for use during a regulation stage and according to a set point of a physical dynamic system, the set point being subject to, whilst operating, the influence of a physical quantity represented by an input parameter, and adopting a behavior defined by an output parameter, obliged to take a value represented by the set point. The output parameter is linked to the input parameter by a transfer function of the system. According to the control method, a characterization stage is implemented to experimentally determine an inverse transfer function linking the input parameter to the output parameter.

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[1] Applicant notes that in rejecting claims the Examiner only recited the claim language and then cited paragraphs of the cited reference. However, these are no more than conclusory statements of anticipation. To make out a prima facie case of anticipation under 35 U.S.C. § 102(b), the Examiner must show that every limitation of every rejected claim is taught by the cited reference. Applicant cannot properly respond to a rejection containing only a conclusory allegation that paragraphs of the cited reference somehow teach each of the limitations of the rejected claims. It is respectfully requested that, when making any rejections, the Examiner specifically explain how the cited reference teaches each limitation of each rejected claim, along with the necessary citation to the specific feature in the cited reference that teaches each feature recited in the claims, so that Applicant can fully understand and properly respond to such rejections.

A modeling stage is implemented, posterior to the characterization stage and prior to the regulation stage, to translate the inverse transfer function through a fuzzy logic model in the form of a set of ranges of the output parameter, to each of which is attributed a specific value of the input parameter. The regulation stage is implemented by determining a membership of the set point to one of the ranges of the set, deducing from the membership and from the fuzzy logic model an estimated value of the input parameter corresponding to the desired equality between the output parameter and the set point, producing a measured value of the input parameter, and regulating the input parameter according to a difference between the estimated value of the input parameter and the measured value of the input parameter but not according to a difference between the set point and a measured value of the output parameter.

The Allie reference is directed to active adaptive control systems that minimize an error signal that is obtained by sensing the system output signal. However, Allie does not discloses a control method for use during a regulation stage of a physical dynamic system in which the regulation stage is implemented by deducing from the membership of a set point to one of the ranges of a set and from a fuzzy logic model an estimated value of the input parameter, producing a measured value of the input parameter, and regulating the input parameter according to a difference between the estimated value of the input parameter and the measured value of the input parameter but not according to a difference between the set point and a measured value of the output parameter, as is recited in amended claim 1. Amended claim 8 contains similar recitations.

Allie discloses active adaptive control systems that sense the system output to obtain an error signal, and then operate to reduce that error signal. More specifically, a system output signal 8 is sensed by an error transducer 16, as shown in Figure 1. The error transducer 16 provides an error signal 44 that is coupled to an adaptive filter 40. In order to reduce the error signal, the adaptive filter 40 uses the processed error signal in providing a correction signal 46 for an output transducer 14, and the output transducer 14 produces a control signal that modifies the system output signal 8.

Thus, the systems disclosed in Allie are conventional closed-loop servo systems that use control techniques (like the one described in the background section of the specification) in which an error signal is generated from the difference between the desired output signal and a measurement of the system output signal, and then this error signal is used to control the system so as to reduce the error signal. See, e.g., specification at 1:27-2:2. Such conventional control techniques can be difficult or impractical to apply when the system output signal can only be measured through complex and/or costly means.

In contrast, the embodiments of the present invention recited in amended claims 1 and 8 provide a control method in which that system is regulated as a function of the difference between a desired value of a system input parameter and the measured value of the system input parameter. More specifically, during regulation, it is deduced, from the membership of a set point to one of the ranges of a set and from a fuzzy logic model, an estimated value of an input parameter. The actual value of the input parameter is measured, and the input parameter is regulated according to the difference between the estimated value of the input parameter and the measured value of the input parameter. The input parameter is not regulated according to a difference between the set point and a measured value of the output parameter. See specification at 8:16-29.

In the embodiments of the present invention recited in amended claims 1 and 8, an input parameter is chosen that has an influence on an output parameter to be controlled, and in a preliminary modeling stage the system to be controlled is modeled by defining an estimated value of an input parameter as a function of a set point. Then, in a regulation stage, the value of the input parameter is measured, and the system is regulated as a function of the difference between the estimated value of the input parameter and the measured value of the input parameter. The system is not regulated as a function of the difference between the set point and a measured value of the output parameter. Thus, embodiments of the present invention provide a pseudo-server system that can be used when the measurement of the output parameter to be controlled is too complex and/or too costly.

Allie does not teach or suggest a control method in which the regulation stage is implemented by deducing from the membership of a set point to one of the ranges of a set and from a fuzzy logic model an estimated value of the input parameter, producing a measured value of the input parameter, and regulating the input parameter according to a difference between the estimated value of the input parameter and the measured value of the input parameter but not according to a difference between the set point and a measured value of the output parameter. Applicant believes that the differences between Allie and the present invention are clear in amended claims 1 and 8, which set forth embodiments of the present invention. Therefore, claims 1 and 8 distinguish over the Allie reference, and the rejection of these claims under 35 U.S.C. § 102(b) should be withdrawn.

As discussed above, amended claims 1 and 8 distinguish over the Allie reference, and thus, claim 7 and claims 10 and 16 (which depend from claims 1 and 8, respectively) also distinguish over the Allie reference. Therefore, it is respectfully submitted that the rejection of claims 1, 7, 8, 10, and 16 under 35 U.S.C. § 102(b) should be withdrawn.

Applicant thanks the Examiner for indicating that claims 2-6, 9, and 11-15 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. Claims 2 and 11 have been rewritten in independent form. Claims 3-6 and claims 12-15 depend from claims 2 and 11, respectively. Further, claim 9 has been amended to depend from claim 11. Accordingly, it is submitted that claims 2-6, 9, and 11-15 are now in condition for allowance.

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Claims 17-20 have been added by this amendment, and are provided to further define the invention disclosed in the specification. Claims 17-20 are allowable for at least the reasons set forth above with respect to claims 1-16.

In view of the foregoing, it is respectfully submitted that the application and the claims are in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is invited to call the undersigned attorney at (561) 989-9811 should the Examiner believe a telephone interview would advance the prosecution of the application.

Respectfully submitted,

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